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Rhodora

JOURNAL OF THE

NEW ENGLAND BOTANICAL CLUB

Conducted and published for the Club, by

MERRITT LYNDON FERNALD, Editor-in-Chief

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LUDLOW GRISCOM
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Vol. 45. August, 1943. No. 536.

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The New England Botanical Club, Inc.
8 and 10 West King St., Lancaster, Pa.
Room 1001, 53 State St., Boston, Mass.

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RHODORA.—A monthly journal of botany, devoted primarily to the flora of the Gray's Manual Range and regions floristically related. Price, $2.00 per year, net, postpaid, in funds payable at par in United States currency in Boston; single copies (if available) of not more than 24 pages and with 1 plate, 20 cents, numbers of more than 24 pages or with more than 1 plate at higher prices (see 3rd cover-page). Volumes 1–8 or some single numbers from them can be supplied only at advanced prices which will be furnished on application; volumes 35–43 can be supplied at $4.00 per volume, net, and some single numbers from them only at advanced prices (see 3rd cover-page). Notes and short scientific papers, relating directly or indirectly to the plants of the northeastern states, will be considered for publication to the extent that the limited space of the journal permits. Forms will be closed five weeks in advance of publication. Authors (of more than two pages of print) will receive 25 copies of the issue in which their contributions appear. Extracted reprints, if ordered in advance, will be furnished at cost.

Address manuscripts and proofs to
M. L. Fernald, 14 Hawthorn Street, Cambridge, Mass.

Subscriptions (making *all remittances* payable to RHODORA) to

Ludlow Griscom, 8 W. King St., Lancaster, Pa., or, preferably, Museum of Comparative Zoology, Cambridge, Mass.

Entered as second-class matter March 9, 1929, at the post office at Lancaster, Pa., under the Act of March 3, 1879.

INTELLIGENCER PRINTING COMPANY
Specialists in Scientific and Technical Publications
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BOTANICAL COLLECTIONS OF THE WOOD YUKON EXPEDITIONS OF 1939–1941

Anderson Bakewell

During the period of 1935–1941 four expeditions under the leadership of Mr. Walter A. Wood, of the American Geographical Society of New York, have entered the St. Elias Range in the Yukon Territory, Canada. These expeditions, sponsored by the Geographical Society, have had as their objective the carrying out of a program of aerial surveying and mapping of the range, centering around the area drained by Wolf Creek Glacier.

In addition to the surveying and mapping, meteorological observations were conducted during all expeditions,[1] geological investigations were made in 1941 and a program of active mountaineering was carried out. Mt. Steele (16,644 ft.) was climbed in 1935[2] and Mt. Equinox (9,970 ft.) in 1936. In 1939 an attempt on Mt. Wood (15,880 ft.) failed due to the prevalence of bad weather[3]. This, together with Mt. Walsh (14,780 ft.), was successfully ascended in the summer of 1941[4].

It was the good fortune of the author to accompany the 1939 and 1941 expeditions, during which botanical collections were made. The writer makes no pretence of being a botanist, nor

[1] The accumulated field data are on file at the American Geographical Society.

[2] W. A. Wood: The Wood Yukon Expedition of 1935: An Experiment in Photographic Mapping, Geographical Review, Vol. 26, 1936, pp. 228–246. American Alpine Journal 1936.

[3] American Alpine Journal 1940: An Attempt on Mt. Wood, St. Elias Range, by Foresta Hodgson Wood.

[4] W. A. Wood: The Parachuting of Expedition Supplies: An Experiment by the Wood Yukon Expedition of 1941, Geographical Review, Vol. 32, 1942, pp. 36–45. American Alpine Journal 1942.

even of being familiar with botanical language. Because of the remoteness of the region, however, and its relative inaccessibility, it was thought that such specimens as might be brought out would be of interest. Dr. Hugh M. Raup, of the Arnold Arboretum, Harvard University, was kind enough to place his time and valuable advice at the disposal of the expedition and to identify the specimens brought in.

Entrance to the region is effected from Skagway, Alaska, by way of the White Pass and Yukon Railway to Whitehorse, Yukon Territory. Thence alternate routes are by road or plane to Burwash Landing on Kluane Lake, 150 miles northwest of Whitehorse. From the Landing it is a four-day pack trip by horse to the snout of Wolf Creek Glacier (ca. 3700 ft.).[1]

Between Kluane Lake and the Donjek river the route crosses the tundra to the north of Wade Creek. The Donjek may be crossed with horses, which then proceed up the bank of Wolf Creek and along the south lateral moraine of the Wolf Creek Glacier.

At this latitude (61° N) timber line is reached between 4000 and 4500 feet. As the base camps of both years were at 5500 feet, the greater portion of the collecting was done above timber line, except for specimens collected en route early in the summer and on the return in the fall.

Collecting in general was done in the tundra and alpine meadows, along streams and the margins of glacial lakes, on rock slides and up to the limit of vegetation on the surrounding peaks.

The work was spread out over the summer and often interrupted for several weeks at a time by prolonged trips on the glaciers and high peaks. Because of these interruptions, and the fact that the collecting had often to cover large areas over short periods of time, no claim is made to its being complete nor representative of all the species in the region. As is usual in the case of a novice collector, the large and outstanding plants were collected first. For photographs and a description of the region the reader is referred to Mr. Wood's article in the 1936 issue of the Geographical Review.[2]

[1] See map, Geographical Review, Vol. 32, 1942, p. 37.
[2] W. A. Wood: Op. cit. page 1.

The writer wishes to express his indebtedness to Mr. Wood for making the work possible, to Mrs. Wood and members of the expeditions for their valuable help and contributions, to Dr. Robert Sharp, geologist of the 1941 Expedition, for his collection of willows, and to Dr. Raup for his assistance in the identification of specimens and the preparation of this report.

Description of Localities

1939

Nos. 1–34, incl. *Burwash Landing* (Lat. 61° 25′ N., Long. 139° W.). Small settlement situated near the north end of Kluane L. at an altitude of 2500′ (ca.). Collecting was done in the surrounding meadows, forests and burned-over areas. July 8–20.

Nos. 35–38, incl. *Base Camp, 1939* (Lat. 61° 15′ N., Long. 140° 9′ W.). Situated beside the lateral moraine on the true right side of Wolf Creek Glacier near its bend, alt. 5500′. Collections are from the moraine, along streams, from rock slides and open areas. July 20–27.

Nos. 39–81, incl. *Advance Base Camp, 1939* (Lat. 61° 15′ N., Long. 140° 12′ W.). On true right bank of Wolf Creek above its juncture with Wolf Creek Glacier, alt. 5700′. Collections from rock slides and tundra. July 27–Aug. 27.

1941

Nos. 82–110, incl. *Between Burwash Landing and Summit Camp,* alt. 2500–4000′ (for description of route see above). June 22.

Nos. 111–114, incl. *Mouth of Wolf Creek* (Lat. 61° 20′ N., Long. 139° 50′ W.), alt. 3200′. June 25.

Nos. 115–164, incl. *Base Camp, 1941* (Lat. 61° 16′ N., Long. 140° 12′ W.). Located on the true left bank of Wolf Creek above its juncture with Wolf Creek Glacier. Collections are from rock slides, tundra, around small glacial lakes, and up to 9000′ in the mountains to the north, as follows: Base Camp, July 9 and 12, nos. 115–122; Base Camp to mountains north of it, alt. 5500–8000′, July 15, nos. 123–137; margins of small glacial lake near Base Camp, August 1, nos. 138–144; above Base Camp in vicinity of Mt. Tempest, alt. 5600–9000′, Aug. 2–3, nos. 145–157; Mt. Tempest, alt. 8000–9000′, Aug. 2–3, nos. 158–159; Base Camp in late August, nos. 160–164.

Collections by Dr. R. P. Sharp are from the vicinity of the right bank of Wolf Creek Glacier between the Base Camp and the mouth of Wolf Creek, Aug. 8 to Sept. 1, nos. 1–15.

List of Plants

In the following list the genera and species are arranged alphabetically within the families, except in the *Compositae* where the genera are first put into tribes. Numbers, unless otherwise stated, are those of the author's collection.

EQUISETACEAE

Equisetum palustre L. Marsh at edge of small glacial lake near Base Camp, 1941, alt. 5500′, no. 142.

PINACEAE

Picea glauca Voss. One mile above snout of Wolf Creek Glacier, south side, alt. 4700′; "typical spruce tree, 40′ high, 10½″ D B H, age about 300 years", *Sharp*, no. 14.

GRAMINEAE

Agropyron latiglume (Scribn. & Sm.) Rydb. Margin of small glacial lake near Base Camp, 1941, alt. 5500′, no. 139.—Spikelets with unusually long awns, resembling those of some Alaskan specimens, notably collections on the Seward Peninsula by Porsild, no. 1189.

Arctagrostis arundinacea (Trin.) Beal. Margin of small glacial lake near Base Camp, 1941, alt. 5500′, no. 140.

Poa arctica R. Br. Mt. Tempest, N. E. of Base Camp, 1941, alt. 8000–9000′, no. 159.—These specimens are doubtfully determined. They are densely matted and depauperate in form.

CYPERACEAE

Carex aquatilis Wahl. Damp tundra at margin of small glacial lake near Base Camp, 1941, alt. 5500′, no. 138.

Eriophorum medium Anders. *E. Chamissonis* C. A. Mey. forma *albidum* (F. Nyl.) Fern.—See Porsild in Rhodora **41:** 199 (1939) and Hultén, Fl. Kamtch **1:** 161 (1927).—Marshy land at margin of small glacial lake near Base Camp, 1941, alt. 5500′, no. 141.

Eriophorum vaginatum L. Damp meadows between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 101.

LILIACEAE

Zigadenus elegans Pursh. Burwash Landing, Kluane L., alt. 2500′, meadows and along streams, no. 4; very common in meadows at Base Camp, 1941, alt. 5500′, no. 115.

ORCHIDACEAE

Cypripedium passerinum Richards. Meadows and woods, between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 88.

SALICACEAE

Populus tacamahacca Mill. At snout of Wolf Creek Glacier, trees 5–15′ high, 2–3″ dia., *Sharp*, no. 1.—"Older trees on higher slopes and gravel terraces 50′ high and 1′ in trunk diameter."

Salix alaxensis (And.) Cov. Along stream near Base Camp, 1941, alt. 5500′, shrub 4′ high, no. 144; along streams at Base Camp, 1941, alt. 5500′, shrubs 6′ high, nos. 161, 162; terminal and lateral moraines of Wolf Creek Glacier, shrubs 3–10′ high, *Sharp*, nos. 2, 4; about 1 mile below snout of Wolf Creek Glacier, and 1500′ up the side of the valley, shrubs 8–10′ high, *Sharp*, no. 3.—Sharp states that this species is the commonest of the shrubby willows on the moraines about Wolf Creek Glacier.

Salix arbusculoides Anders. Three miles E. of Base Camp, 1939, alt. 5500′, in tundra on slope back of lateral moraine of Wolf Creek Glacier, occasional, shrubs 1½–4′ high, *Sharp*, no. 8; 1 mile above snout of Wolf Creek Glacier, associated with *Populus*, *Picea*, and *Salix glauca* var., shrubs 10–15′ high, *Sharp*, no. 9.

Salix arctica Pall. Along stream near Base Camp, 1941, alt. 5500′, no. 143; tundra above Base Camp, 1941, vicinity of Mt. Tempest, alt. 5600–9000′, trailing shrub, no. 154.

Salix Barrattiana Hook. Base Camp, 1941, south slope of lateral moraine of Wolf Creek Glacier, growing in a "low bushy mat, 2–4 ft. high, fairly abundant," *Sharp*, no. 10.

Salix glauca L. var. acutifolia (And.) Schn. Along stream at Base Camp, 1941, alt. 5500′, shrub 6′ high, no. 160; gravel flat in front of Wolf Creek Glacier terminal moraine, shrubs 3–5′ high, occasional, *Sharp*, no. 13.—Number 160 appears to approach *S. niphoclada* in having very short petioles.

Salix glauca L. var. One mile above snout of Wolf Creek Glacier, associated with *Populus*, *Picea*, and *Salix arbusculoides*, shrubs 5–15′ high, up to 3″ dia., "one of the 2 dominant willows here . . . Growing in bushes but not in thickets", *Sharp*, no. 11; lateral moraine of Wolf Creek Glacier at Base Camp, 1941, alt. 5500′, shrubs 2–4′ high, *Sharp*, no. 12.

Salix reticulata L. Tundra between Base Camp, 1941, and mountains north of it, alt. 5500–8000′, no. 125-a.

Salix Richardsonii Hook. Tundra 500′ above Wolf Creek Glacier, shrubs 2′ high, abundant in places, *Sharp*, no. 6; gravel flat just below terminal moraine of Wolf Creek Glacier, *Sharp*, no. 7; north-facing slope back of lateral moraine of Wolf Creek Glacier, in tundra, shrubs 2″–1½′ high, *Sharp*, no. 5.

Salix polaris Wahl. var. selwynensis Raup. Advance Base Camp, 1939, alt. 5700′, no. 79; tundra above Base Camp, 1941, alt. 5600–9000′, abundant, trailing shrub 2–3″ high, no. 153.—This material is placed here provisionally. Number 153 answers

the description written by Schneider (Bot. Gaz. **67:** 49–50) of plants collected by Shainwalt on Mt. McKinley. The writer has not seen this material, which should no doubt have further study.

BETULACEAE

Alnus crispa (Ait.) Pursh. On flat gravel terrace of small stream at snout of Wolf Creek Glacier, in thickets 10–20′ high, *Sharp*, no. 15.

POLYGONACEAE

Polygonum Bistorta L. Common in alpine meadows, Advance Base Camp, 1939, alt. 5700′, no. 48; tundra between Base Camp, 1941, and mountains north of it, alt. 5500–5700′, no. 125.

Polygonum viviparum L. Meadows at Burwash Landing, Kluane L., alt. 2500′, no. 30.

CHENOPODIACEAE

Chenopodium capitatum (L.) Asch. Along streams at Burwash Landing, Kluane L., alt. 2500′, no. 20.

CARYOPHYLLACEAE

Arenaria macrocarpa Pursh. Advance Base Camp, 1939, alt. 5700′, no. 72.

Cerastium Beeringianum Cham. & Schl. Between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 94.

Lychnis apetala L. Advance Base Camp, 1939, alt. 5700′, no. 49.

Silene acaulis L. var. exscapa (All.) DC. Advance Base Camp, 1939, alt. 5700′, no. 76.

Stellaria calycantha (Ledeb.) Bong. Meadows at Burwash Landing, alt. 2500′, no. 32.

PORTULACACEAE

Claytonia sarmentosa C. A. Mey. Advance Base Camp, 1939, alt. 5700′, no. 77; alpine slopes, between Base Camp, 1941, and mountains north of it, alt. 5500–8000′, no. 136.

Claytonia sp. Advance Base Camp, 1939, alt. 5700′, no. 58.

RANUNCULACEAE

Aconitum delphinifolium DC. Alpine meadows, Advance Base Camp, 1939, alt. 5700′, no. 44; shaded damp meadows above Base Camp, 1941, vicinity of Mt. Tempest, alt. 5600–9000′, no. 145.

Aquilegia brevistyla Hook. Meadows and spruce woods, Burwash Landing, Kluane L., alt. 2500′, no. 23.

Delphinium scopulorum Gray var. glaucum Gray. Mead-

ows and along streams, Burwash Landing, Kluane L., alt. 2500′, no. 15.

Ranunculus reptans L. Margin of lake above Base Camp, 1941, vicinity of Mt. Tempest, alt. 5600–9000′, no. 152.

PAPAVERACEAE

Papaver alaskanum Hultén. Advance Base Camp, 1939, alt. 5700′, no. 75; tundra above Base Camp, 1941, vicinity of Mt. Tempest, alt. 5600–9000′, no. 147.

CRUCIFERAE

Arabis hirsuta (L.) Scop. var. pycnocarpa (Hopkins) Rollins. See Rollins in Rhodora **43:** 318 (1941).—Meadows and along streams, Burwash Landing, Kluane L., alt. 2500′, no. 14.

Cardamine purpurea Cham. & Schl. Advance Base Camp, 1939, alt. 5700′, no. 56; damp woods between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 107.

Descurainia Richardsonii (Sweet) O. E. Schulz. Meadows at Burwash Landing, Kluane L., alt. 2500′, no. 28.

Draba alpina L. Advance Base Camp, 1939, alt. 5700′, nos. 63, 73; rock slides, between Base Camp, 1941, and mountains north of it, alt. 5500–8000′, no. 135.—Number 73 appears to be var. *nana* Hook.

Draba glabella Pursh. Between Base Camp, 1941, and mountains north of it, alt. 5500–6000′, no. 130.

Draba nivalis Lilj. Damp meadows above Base Camp, 1941, vicinity of Mt. Tempest, alt. 5600–9000′, no. 150-a.

Erysimum inconspicuum (S. Wats.) MacM. Meadows at mouth of Wolf Creek, alt. 3200′, no. 114.

CRASSULACEAE

Sedum integrifolium (Raf.) A. Nels. Advance Base Camp, 1939, alt. 5700′, no. 47; tundra above Base Camp, 1941, vicinity of Mt. Tempest, alt. 5600–9000′, no. 149.

SAXIFRAGACEAE

Chrysosplenium beringianum Rose. Advance Base Camp, 1939, alt. 5700′, no. 52.

Parnassia Kotzebuei Cham. Advance Base Camp, 1939, alt. 5700′, no. 65.

Parnassia montanensis Fern. & Rydb. Advance Base Camp, 1939, alt. 5700′, no. 50.

Parnassia palustris L. var. neogaea Fern. Meadows at Burwash Landing, Kluane L., alt. 2500′, no. 12.

Saxifraga bronchialis L. ssp. Funstoni (Small) Hultén. Advance Base Camp, 1939, alt. 5700′, no. 55.

Saxifraga caespitosa L. Mt. Tempest, alt. 8000–9000′, no. 158.

Saxifraga flagellaris Willd. Advance Base Camp, 1939, alt. 5700′, no. 62.

Saxifraga Hirculus L. Advance Base Camp, 1939, alt. 5700′, no. 57.

Saxifraga oppositifolia L. Advance Base Camp, 1939, alt. 5700′, no. 74; above Base Camp, 1941, vicinity of Mt. Tempest, alt. 5600–9000′, no. 148; rock slides between Base Camp, 1941, and mountains north of it, alt. 5500–8000′, no. 134.

Saxifraga rivularis L. Advance Base Camp, 1939, alt. 5700′, no. 66.

Saxifraga serpyllifolia Pursh. Damp meadows above Base Camp, 1941, vicinity of Mt. Tempest, alt. 5600′ to 9000′, no. 146.

Saxifraga tricuspidata Rottb. Rock slides near Base Camp, 1939, alt. 5500′, no. 37; rock slides between Base Camp, 1941, and mountains north of it, alt. 5500–8000′, no. 132.

ROSACEAE

Dryas integrifolia Vahl. Meadows near Base Camp, 1939, alt. 5500′, no. 38; Advance Base Camp, 1939, alt. 5700′, no. 71; damp woods between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 103; meadows at Base Camp, 1941, alt. 5500′, no. 117.

Fragaria glauca (S. Wats.) Rydb. Damp forest between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 99.

Potentilla biflora Willd. Advance Base Camp, 1939, alt. 5700′, no. 61.

Potentilla diversifolia Lehm. See Carn. Inst. Wash. Publ. no. **520:** 136, 152 (1940). Damp meadows above Base Camp, 1941, vicinity of Mt. Tempest, alt. 5600–9000′, no. 155.

Potentilla fruticosa L. Meadows at Burwash Landing, Kluane L., alt. 2500′, no. 13; open fields between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 84; meadows at mouth of Wolf Cr., alt. 3200′, no. 112; meadows at Base Camp, 1941, alt. 5500′, no. 122.

Potentilla nivea L. Advance Base Camp, 1939, alt. 5700′, no. 81.

Potentilla pectinata Raf. Meadows at Burwash Landing, Kluane L., alt. 2500′, no. 9.

Potentilla uniflora Ledeb. Advance Base Camp, 1939, alt. 5700′, no. 64.

Rosa acicularis Lindl. Meadows and hills at Burwash Landing, Kluane L., alt. 2500′, no. 5; meadows between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 98.

Rubus Chamaemorus L. Meadows between Burwash Landing and Summit Camp, alt. 2500–4000′, nos. 102, 105.

LEGUMINOSAE

Astragalus frigidus (L.) Gray. Meadows between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 97.—This material appears to represent var. *dawsonensis* Rousseau, Contr. Lab. Bot. Univ. Montreal, No. **24:** 44–9 (1933), but is also very close to var. *littoralis* Hook.

Hedysarum alpinum L. var. americanum Michx. Meadows and along streams at Burwash Landing, alt. 2500′, no. 7; open fields between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 85.

Hedysarum Mackenzii Richards. Woods and meadows at mouth of Wolf Cr., alt. 3200′, no. 111.

Lupinus arcticus Wats. Meadows and along streams at Burwash Landing, alt. 2500′, no. 2; fields and meadows between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 82.

Oxytropis gracilis (A. Nels.) K. Schum. Meadows and along streams at Burwash Landing, Kluane L., alt. 2500′, no. 6; open fields between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 87.—These two numbers are placed in *O. gracilis* provisionally.

Oxytropis pygmaea (Pall.) Fern. Advance Base Camp, 1939, alt. 5700′, no. 42.

Oxytropis sp. Meadows at mouth of Wolf Cr., alt. 3200′, no. 113.

LINACEAE

Linum Lewisii Pursh. Meadows and spruce woods, Burwash Landing, Kluane L., alt. 2500′, no. 27.

ELAEAGNACEAE

Shepherdia canadensis (L.) Nutt. In tundra at Base Camp, 1941, alt. 5500′, very abundant, no. 163.

ONAGRACEAE

Epilobium angustifolium L. Grassy hills and along streams at Burwash Landing, Kluane L., alt. 2500′, no. 1; meadows and burned-over woods, between Burwash Landing and Summit Camp, alt. 2500–4000′, nos. 109, 110.

Epilobium latifolium L. Meadows and along streams at Burwash Landing, Kluane L., alt. 2500′, no. 3; meadows at Base Camp, 1939, alt. 5500′, no. 35; meadows at Base Camp, 1941, alt. 5500′, no. 116.

PYROLACEAE

Pyrola grandiflora Rad. Meadows, Base Camp, 1939, alt. 5500′, no. 36; Advance Base Camp, 1939, alt. 5700′, no. 54;

damp woods between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 106.

ERICACEAE

Arctostaphylos rubra (Rehd. & Wils.) Fern. Tundra at Base Camp, 1941, alt. 5500′, very abundant, no. 164.

Ledum groenlandicum Oeder. Tundra between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 100.

Rhododendron lapponicum (L.) Wahl. Damp tundra at margin of small glacial lake near Base Camp, 1941, alt. 5500′, no. 138-a.

GENTIANACEAE

Gentiana falcata Turcz. Near Advance Base Camp, 1939, alt. 6000′, no. 80; damp meadows above Base Camp, 1941, vicinity of Mt. Tempest, alt. 5600–9000′, no. 150.—These specimens appear to form the first record of *G. falcata* in North America. They are a good match for specimens in the Gray Herbarium from the Altai Mts. of Siberia. Some of the latter have larger flowers than the American, but many agree perfectly in size and proportions. The Yukon plants resemble superficially *G. nana* Wulf. of the Carinthian Alps, but in *G. nana* the ovary is relatively short and ovate. In ours the ovary is a little longer than the corolla tube, and is lanceolate to lance-ovate. Also the calyx lobes in *G. nana* are not falcate and incurved as they are in the Yukon material and in *G. falcata*.

Gentiana procera Holm. Meadows and along streams at Burwash Landing, Kluane L., alt. 2500′, no. 21.

Gentiana propinqua Richards. Alpine meadows, Advance Base Camp, 1939, alt. 5700′, no. 43.

Gentiana prostrata Haenke. Meadows and along streams, Burwash Landing, Kluane L., alt. 2500′, no. 22; alpine meadows, Advance Base Camp, 1939, alt. 5700′, no. 40; shady forest and alpine meadow, between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 91.

POLEMONIACEAE

Phlox Richardsonii Hook. Advance Base Camp, 1939, alt. 5700′, no. 59; rock slides between Base Camp, 1941, and mountains north of it, alt. 5500–8000′, no. 131.—Number 131 is an excellent match for a fragment of the type of *P. Richardsonii* at the Gray Herbarium.

Polemonium acutiflorum Willd. Meadows and spruce woods at Burwash Landing, Kluane L., alt. 2500′, no. 25; along streams and in wet meadows, Advance Base Camp, 1939, alt. 5700′, no. 41; between Base Camp, 1941, and mountains north of it, alt. 5500–8000′, no. 126.

Polemonium boreale Adams. Advance Base Camp, 1939, alt. 5700′, no. 39; shaded rock slides above Base Camp, 1941, found up to 9000′ on Mt. Tempest, no. 157[1].

Polemonium pulcherrimum Hook. Open fields between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 86.

Polemonium Richardsonii Graham. Advance Base Camp, 1939, alt. 5700′, no. 39-a; meadows between Base Camp, 1941, and mountains north of it, alt. 5500–8000′, no. 127.

BORAGINACEAE

Mertensia paniculata (Ait.) G. Don. Along streams at Burwash Landing, Kluane L., alt. 2500′, no. 19; damp woods and alpine meadows between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 95; meadows between Base Camp, 1941, and mountains north of it, alt. 5500–8000′, no. 124.

Myosotis alpestris Schmidt. Alpine meadows, Advance Base Camp, 1939, alt. 5700′, no. 45; meadows between Base Camp, 1941, and mountains north of it, alt. 5500–8000′, no. 123.

SCROPHULARIACEAE

Castilleja pallida (L.) Spreng. ssp. elegans (Ostenfeld) Pennell. Slopes of rocky moraines, between Base Camp, 1941, and mountains north of it, alt. 8000′, no. 137.

Lagotis glauca Gaertn. Advance Base Camp, 1939, alt. 5700′, no. 67.—This specimen lacks the lower stem and leaves, but probably represents the var. *lanceolata* Hultén.

Pedicularis capitata Adams. Alpine slopes between Base Camp, 1941, and mountains north of it, alt. 5500–8000′, no. 133.

Pedicularis labradorica Wirsing. Advance Base Camp, 1939, alt. 5700′, no. 53.

Pedicularis sudetica Willd. Meadows between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 104.

Pedicularis verticillata L. Meadows at Burwash Landing, Kluane L., alt. 2500′, no. 8; Advance Base Camp, 1939, alt. 5700′, no. 69; meadows between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 90; meadows at Base Camp, 1941, alt. 5500′, no. 118.

Penstemon Gormanii Greene. Meadows at Burwash Landing, Kluane L., alt. 2500′, no. 24.

RUBIACEAE

Galium boreale L. Meadows at Burwash Landing, Kluane L., alt. 2500′, no. 31.

[1] The writer is indebted to Dr. E. T. Wherry for the determination of specimens cited under *P. boreale* and *P. Richardsonii*.

VALERIANACEAE

Valeriana capitata Pall. Meadows at Burwash Landing, Kluane L., alt. 2500′, no. 11; meadows between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 108.

COMPOSITAE

Solidago decumbens Greene var. oreophila (Rydb.) Fern. Meadows at Burwash Landing, Kluane L., alt. 2500′, no. 34.

Solidago multiradiata Ait. Advance Base Camp, 1939, alt. 5700′, no. 46; meadows at Base Camp, 1941, alt. 5500′, no. 120. Number 46 appears to represent var. *arctica* (DC.) Fern.

Aster alpinus L. Burwash Landing, Kluane L., alt. 2500′, no. 17; between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 93.

Aster sibiricus L. Meadows at Burwash Landing, alt. 2500′, no. 16; Advance Base Camp, 1939, alt. 5700′, no. 78; fields between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 92; meadows at Base Camp, 1941, alt. 5500′, no. 119.

Erigeron elatus Greene. Meadows at Burwash Landing, Kluane L., alt. 2500′, no. 29.

Erigeron radicatus Hook. Advance Base Camp, 1939, alt. 5700′, no. 60.

Erigeron unalaschkensis (DC.) Vierh. Advance Base Camp, 1939, alt. 5700′, no. 70; rock slides between Base Camp, 1941, and mountains north of it, alt. 5500–8000′, no. 129.

Achillea borealis Bong. Meadows at Burwash Landing, Kluane L., alt. 2500′, no. 10; open fields between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 83.

Artemisia arctica Less. Advance Base Camp, 1939, alt. 5700′, no. 68.

Arnica attenuata Greene. Meadows between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 96.

Arnica lonchophylla Greene. Meadows at Burwash Landing, Kluane L., alt. 2500′, no. 18.

Senecio lugens Richards. Fields between Burwash Landing and Summit Camp, alt. 2500–4000′, no. 89; meadows at Base Camp, 1941, alt. 5500′, no. 121.

Senecio resedifolius Less. Advance Base Camp, 1939, alt. 5700′, no. 51.

Saussurea densa (Hook.) Rydb. Rock slides above Base Camp, 1941, vicinity of Mt. Tempest, alt. 5600–9000′, no. 151.

Crepis nana Richards. Gravel slides, Burwash Landing, Kluane L., alt. 2500′, no. 26.

CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD UNIVERSITY—NO. CXLVIII

M. L. Fernald

(*Continued from page 303*)

VIII. NOTES ON HIERACIUM

Hieracium **Robinsonii** (Zahn), stat. nov. *H. smolandicum*, subsp. *Robinsonii* Zahn in Engler, Pflanzenr. iv[280]. 468 (1921).

Although Zahn placed with doubt the plant collected by Robinson & Schrenk in southeastern Newfoundland under the Scandinavian *H. smolandicum* Almq. it differs in so many strong characters that I think it wiser to consider it an endemic eastern American species. So far as I have yet found there is no evidence that any of the European members of the complex Section *Vulgata* are indigenous with us. We have a very diverse lot of introduced and weedy plants of the section. *H. Robinsonii*, however, is indigenous along chiefly slaty river-banks in Newfoundland, eastern Quebec, Cape Breton, northern Maine and northern New Hampshire. From the Scandinavian *H. smolandicum* our native plant differs in its thick and firm leaves glabrous beneath or merely short-pilose along the midrib, the cauline leaves twice as many, mostly 4–10, and more gradually decreasing in size to the summit (in *H. smolandicum* the thin leaves copiously long-villous, the cauline 3–6 and confined chiefly to lower half of stem), and the phyllaries caudate-attenuate (in *H. smolandicum* blunt or merely acuminate).

It is at present quite impossible to identify with any certainty the diverse series of introductions belonging in the macro-species *Hieracium vulgatum*. In his inclusive *H. vulgatum* Zahn recognizes 144 so-called "subspecies" and many varieties, the subspecies sometimes grouped under such unilluminating heads as "*a.* Folia latiora" opposed to "*b.* Folia angustiora" or "a. Squamae dorso vel margine parcefloccosae" opposed to "b. Squamae efloccosae atrae nitentes", the latter series containing "subspecies" with "Involucra . . . interdum parcefloccosa" (subsp. no. 131) or "squamis . . . parcefloccosis" (subsp. no. 132), the former series with "subspecies" with "squamis . . . subefloccosis". In other cases series of 20 or 30 "subspecies" are enumerated without even these hair-

splitting differentiations. Surely, without a clearer understanding of and a saner guide to the European variations of this heteromorphic group, it is better for the present to pass all the introduced plants of § *Vulgata*, with basal leaves narrowed to the petiole as *H. vulgatum*.

Returning to *Hieracium Robinsonii*, Zahn's very full description of the *Robinson & Schrenk* plant is accompanied by the following synonymy: "An *H. molle* Pursh Fl. Am. sept. II, (1816) 503? *H. vulgatum* Gray Syn. Fl. N.-Am. I. 2 (1884) 429". As to the plants of the Synoptical Flora designated by Gray (on p. 424, not 429) as *H. vulgatum* from "Labrador, *Kohlmeister*, &c. Canada, on shores of the Lower St. Lawrence (*Macoun*), there perhaps introduced", they are of two very different species. The Labrador element is *H. groenlandicum* Arv.-Touv., which is native in outer Labrador, northern Newfoundland, and Anticosti, as well as Greenland, while the Macoun material seen by Gray was a sheet of Macoun's (August, 1883) with two species, the data reading: "Shores of the St Lawrence from Point Levis to Anticosti. Locality. Point Levis (Large specimen), River de Brig, Anticosti". The plant from Levis is the ubiquitous weedy species which abounds in the region of Quebec city, *H. vulgatum* Fries; the Anticosti specimen is good *H. groenlandicum*. As for *H. molle* sensu Pursh, not Jacquin, that was evidently *H. groenlandicum* also; incidentally the date of Pursh was 1814, not 1816 as given by Zahn.

The type and only specimen of *H. Robinsonii* seen by Zahn came from the southeastern side of Newfoundland, more than 550 miles southeast of the mouth of the St. Lawrence River[1]. Nevertheless Zahn, with the Germanic inaccuracy regarding American geography to which we have become accustomed, concocted the citation: "Am unteren Lorenzstrom: Cataracts of Rocky River in Newfoundland". The following are the stations for *H. Robinsonii* (often distributed as *H. vulgatum*) represented in the Gray Herbarium and the Herbarium of the New England Botanical Club.

Newfoundland: crevices of rocks, infrequent, South Arm River, Holyrood, and Cataracts of Rocky River, *Robinson &*

[1] Equivalent in distance to placing Berlin in England, on the western coast of Norway, on the Gulf of Riga, on the Dneiper River or on the Mediterranean, or equivalent in distance to placing Vienna on the Seine or in Belgium or on Sardinia.

Schrenk, no. 227 (ISOTYPE); ledges and gravel along Waterford River between Waterford Bridge and St. John's, *Fernald & Wiegand*, no. 6439. QUEBEC: Saguenay River, Roberval, July 18, 1892, *G. G. Kennedy;* ledges along River Ste. Anne des Monts, Gaspé County, August, 1905, *Collins & Fernald;* ledges below Fraser Falls, Rivière du Loup, July 11 and 13, 1904, *Collins & Fernald;* rocks by Lower Fall, Rivière du Loup, *A. S. Pease*, no. 2477. NOVA SCOTIA: gravel in river-bottoms, Big Intervale, Cape Breton Island, *Macoun*, no. 16,699. MAINE: argillaceous ledges by Meduxnakeag River, Monticello, *Fernald & Long*, no. 14,923; abundant in crevices of calcareous ledges and on cliffs by Mattawamkeag River, at foot of the Island, Island Falls, September 8, 1897, *Fernald;* cliffs (calcareous slate) along Piscataquis River, Sangerville, June 26, 1895, *Fernald*, no. 236; July 15 and 29, 1900, *W. N. Park;* rocky soil about ledges, Carrabassett River, North Anson, July 4, 1885, *J. F. Collins.* NEW HAMPSHIRE: ledges, Gorge of Diamond River, Dartmouth College Grant, Coös County, *Pease*, no. 10,513.

It may be serviceable to others to have my key-characters separating the 4 species of § *Vulgata* which I can recognize in eastern America:

a. Stem truly scapiform or subscapiform, naked or with 1 or 2 cauline leaves borne near base; lowest leaves with rounded or cordate bases.....*H. murorum* L. (locally adventive from Europe).

a. Stem with 2–12 leaves scattered to near inflorescence; lower leaves attenuate to petioles....*b.*

b. Involucre and pedicels stipitate-glandular, with no or but few glandless villi overtopping the glands; inflorescence paniculate-corymbose, with arched- or divergent-ascending branches and pedicels; heads few—30 or more. *H. vulgatum* Fries (All-inclusive series of introductions).

b. Involucre and pedicels glandless or only very minutely glandular, copiously long-pilose or villous with glandless hairs; inflorescence strict, with 1–10(–20) heads on erect peduncles or branches; indigenous.

Larger (lower) leaves 1–5 cm. broad, membranaceous, villous-ciliate, their petioles and the midribs of lower surfaces copiously villous; heads (1–)4–20; phyllaries blunt or acuminate.....*H. groenlandicum* Arv.-Touv.

Larger (lower) leaves 0.7–2 cm. broad, coriaceous, eciliate or nearly so, their petioles and the midribs of lower surfaces only sparsely pilose or glabrescent; heads 1–5(–8); phyllaries caudate-attenuate.....*H. Robinsonii.*

The stations known to me for *H. Robinsonii* are given above. Those of *H. groenlandicum* (outside Greenland) are as follows: LABRADOR: Rama, *A. Stecker*, no. 347; open hillside, September Harbor, lat. 56° 31′, long. 61° 10′, *Bishop*, no. 608. NEWFOUNDLAND: thickets on slaty hills back of Little Quirpon, *Fernald &*

Gilbert, no. 29,268; thicket by Big Brook, Straits of Belle Isle, *Fernald & Long*, no. 29,267. Anticosti Island, Quebec: talus calcaire et barachois, Rivière au Saumon, *Victorin et al.*, no. 21,303; sur les platières élevées et sèches, R. au Saumon, *Victorin & Rolland*, no. 27,583; R. de Brig [c ?], *Macoun*, no. 18, in part; R. la Loutre, *Victorin & Rolland*, nos. 25,356–25, 358; à plusieurs milles en amont, R. Jupiter, *Victorin & Rolland*, no. 25,360; sur les platières sèches, R. du Brick, *Victorin & Rolland*, no. 27,579; sur la rocaille calcaire près de l'embouchure, R. à la Patate, *Victorin et al.*, no. 21,310; talus herbeux, R. Galiote, *Victorin & Rolland*, no. 25,359; sur les talus des gorges, R. Chicotte, *Victorin & Rolland*, no. 27,587; éboulis argilo-calcaires, R. Ferrée, *Victorin & Rolland*, no. 25,355; sur les talus d'alluvion, R. Belle, *Victorin & Rolland*, no. 27,591.

H. canadense Michx., var. **fasciculatum** (Pursh), stat. nov. *H. fasciculatum* Pursh, Fl. Am. Sept. ii. 504 (1814).

Var. *fasciculatum* is the common plant which passes in the Northern States and southern Canada as typical *Hieracium canadense*. It is, however, not the extreme of the species which Michaux had, from Lake Mistassini, and well described as *H. canadense* in his Fl. Bor.-Am. ii. 86 (1803). Michaux clearly described, and the beautiful photograph before me of his type shows, the northern extreme, mostly low, with few large and remote thin leaves and open paniculate-corymbose inflorescence of few long-peduncled heads with blackish involucre of oblong-lanceolate phyllaries. Typical *H. canadense* occurs from southern Labador to northern British Columbia, south to Newfoundland (where nearly ubiquitous), Cape Breton, Prince Edward Island, northern Maine, northern New Hampshire, Ontario, northern Michigan, northeastern Iowa, Saskatchewan, Montana, Idaho and Oregon. It is the plant which in the West passes as *H. columbianum* Rydb. or *H. canadense*, var. *columbianum* (Rydb.) St. John. It was also described as *H. macrophyllum* Pursh, Fl. Am. Sept. ii. 504 (1814), Pursh noting the distinctive characters, "panicula divaricato-corymbosa, pedunculis elongatis nudis", which is quite similar to Michaux's "corymbo paucifloro: pedunculis longis". Pursh also added the significant comment: "leaves the largest of the genus".

Var. *fasciculatum* is the common plant which occurs from southern Quebec to southern Ontario and Minnesota, south to Nova Scotia, New England, northern New Jersey, Pennsylvania, Ohio, Indiana, Illinois and Iowa. It was described by Pursh

"caule erecto folioso . . . ramis paniculae divaricatis brevibus, pedicellis subfasciculatis pubescentibus". It was also described by Pursh (p. 503) from western New York and Canada as *H. virgatum*.

Torrey & Gray understood typical *Hieracium canadense* and its var. *fasciculatum* but, without knowing Michaux's type, they reversed the two, calling var. *fasciculatum* typical *H. canadense* and treating the northern typical *H. canadense* (*H. macrophyllum* Pursh) as *H. canadense*, var. *latifolium* Torr. & Gr. Fl. N. Am. ii. 476 (1843). As I understand the species it falls into three well defined varieties as follows:

a. Involucre 8–13 mm. high; upper internodes of stem and branches without or with only a few scattered setae.
Involucre dark fuscous to blackish; median phyllaries oblong-lanceolate, 1.5–2 mm. broad, the inner ones fuscous throughout or with broad dark central band; stems 1.5–10 dm. high; leaves (5–)8–20(–30), mostly remote, thin or membranaceous to firm, oblong or narrowly ovate, lanceolate or oblanceolate; heads 1–many, on arched-ascending peduncles mostly 2–10 cm. long in an open or divaricately corymbiform panicle. . . *H. canadense* (typical).
Involucre pale olive; median phyllaries narrowly lance-attenuate, 1–2 mm. broad at base, the inner ones pale throughout or merely with slender greenish midrib and green tip; stems mostly 0.5–1.5 m. high, stiffly erect; leaves 25–50 or more, often subapproximate, lanceolate to narrowly oblong-ovate, thick to coriaceous; heads many, often subvirgately fascicled or subumbellately corymbose, on stiff peduncles mostly 0.5–4 cm. long. . . . . Var. *fasciculatum*.

a. Involucres 5–10 mm. high; panicle more or less virgate-fastigiate to umbelliform, with slender and erect elongate peduncles; stem slender, 0.5–9 dm. high, its middle and upper internodes and the peduncles copiously villous-hirsute with hairs 1.5–3 mm. long; leaves as in typical var. or the lower more strongly ciliate. . . . . Var. *hirtirameum*.

H. CANADENSE Michx. Fl. Bor.-Am. ii. 86 (1803). *H. macrophyllum* Pursh, Fl. Am. Sept. ii. 504 (1814). *H. canadense*, var. *latifolium* Torr. & Gray, Fl. N. Am. ii. 476 (1843). *H. auratum* sensu Fries, Epic. Gen. Hierac. 124 (1862) not Fries, Symb. Hist. Hierac. 181 (1848). *H. columbianum* Rydb. in Bull. Torr. Bot. Cl. xxviii. 513 (1901). *H. canadense columbianum*, as subsp. (Rydb.) Piper in Piper & Beattie, Fl. Se. Wash. 351 (1914). *H. canadense*, var. *macrophyllum* (Pursh) Farwell in Rep. Mich. Acad. Sci. xx. 195 (1918). *H. laevigatum* subsp. *canadense* (Michx.) Zahn in Engler, Pflanzenr. iv[280]. 891 (1922). *H. canadense*, var. *columbianum* (Rydb.) St. John, Fl. Se. Wash. and Adj. Idaho, 459 (1937).—Range given above.

Var. FASCICULATUM (Pursh) Fernald, supra. *H. fasciculatum* Pursh, Fl. Am. Sept. ii. 504 (1814). *H. virgatum* Pursh, l. c. 503 (1814). *H. Kalmii* sensu Bigel. Fl. Bost. ed. 2: 288 (1824); sensu Torr. Compend. 280 (1826); sensu Spreng. Syst. iii. 646 (1826); not L. Sp. Pl. ii. 804 (1753).—Range given above.

Var. HIRTIRAMEUM Fernald in RHODORA, xvii. 19 (1915).—Damp to dry ledges, shores, cliffs and clearings, Newfoundland to Wisconsin, south to New Brunswick, New England and northeastern Pennsylvania.

As originally pointed out Var. *hirtirameum* is more inclined than other variations of the species to distortions due to aphids or fungi. Some altered individuals show secondary involucres only 2 mm. high.

As to *Hieracium Kalmii*, it was said by Linnaeus to have been collected in Pennsylvania by Kalm. The type, of which two different photographs are before me, looks like a meagre specimen of *H. canadense*, var. *fasciculatum*, for which Bigelow, Torrey and Sprengl mistook it. Its involucre, however, is less imbricated, with the phyllaries obtuse; and after studying the specimen Gray wrote: " . . . Scales of involucre narrowly linear, . . . in a single series . . . Ovaries . . . glabrous, not striate . . . Pappus a single series of fragile strongly denticulate-scabrous bristles . . . ; we are confident that his plant is not of North American origin".—Gray in Torr. & Gray, l. c. 479 (1843).

In describing *Hieracium canadense* Michaux compared it with the European *H. sabaudum* L., a species which superficially suggests typical *H. canadense*, but from which our native plant differs consistently in many characters. Since the European species is appearing locally as a weed with us it may here be recorded.

H. SABAUDUM L. Differing from *H. canadense* as follows: Hairs of lower internodes and leaf-surfaces bulbous-based; panicle occupying one third to two thirds the height of the plant, loosely paniculate, not umbelliform; involucre glabrous or with few nonglandular hairs (young involucre of *H. canadense* commonly somewhat glandular); phyllaries round-tipped, the lowest spreading (in *H. canadense* at least the inner phyllaries attenuate to tip, all appressed).—Sp. Pl. ii. 804 (1753).—Old World species becoming naturalized with us. I have examined the following American material. MASSACHUSETTS: vacant grassy lot, Memorial Drive near Cottage Farm Bridge, Cambridge, October 6,

1928, *S. F. Blake*, no. 10,789, the plant now abundant and found elsewhere in Cambridge; abundant in vacant lot off Pleasant Street, Brookline, September 29, 1913, *F. F. Forbes*.

H. VENOSUM L., var. NUDICAULE (Michx.) Farwell in Mich. Acad. Sci. Rep. xx. 194 (1918). *H. Gronovii*, var. α. *nudicaule* Michx. Fl. Bor.-Am. ii. 87 (1803).

In making this transfer Dr. Farwell did not clearly differentiate between true *Hieracium venosum* and the variety. From the start the two Linnean species, *H. venosum* L. Sp. Pl. ii. 800 and *H. Gronovii* L. l. c. 802 (1753), were hopelessly mixed. As noted by Gray in Torrey & Gray, Fl. N. Am. 478 (1843) and as is apparent from the Linnean diagnoses his description of *H. venosum*, drawn directly from Gronovius, calls for a thick-stemmed plant: "HIERACIUM foliis cuneiformibus hirtis, scapo nudo crassissimo erecto"; while the very detailed description of *H. Gronovii*, "Folia *radicalia obovata, obtusa, integerrima, tenuitate membranacea, supra pilis raris adspersa, subtus subviolacea.* Caulis *pedalis, filiformis, uno alterove folio lanceolato, paniculatus, panicula inaequali*", vividly describes the plant which Willdenow, Sp. Pl. iii. 1570 (1804), Torrey & Gray and all later authors have called *H. venosum*. There is no type of *H. venosum* in the Linnean Herbarium but the citations by Linnaeus of the two Virginian plants, *Hieracium . . . lapathi venis sanguineis inscriptis foliis* of Plukenet and *H. . . . foliis punctis & venis sanguineis notatis* of Banister, and the descriptive name *H. venosum* can mean only the plant we know under that name. Willdenow and after him Torrey & Gray so used the name and, in view of the sad mixup at the start, this seems the right interpretation. As to *H. Gronovii*, as badly mixed, Gray, who studied the specimens involved, selected the plant of Gronovius cited by Linnaeus to typify that confused name.

Hieracium venosum may have strictly rosulate leaves and a naked scape or 1–6 cauline leaves, the latter series of selected specimens being *H. venosum*, var. β. *subcaulescens* Torr. & Gray. Experience in the field shows that it has no definite range and that individuals with and without cauline leaves are frequently associated. Taxonomically it seems wholly unimportant. So, it seems to me, is var. *Blombergii* Zahn in Engler, Pflanzenr. iv[280]. 1117 (1922). Its only character, the presence of abundant glands on the involucre, is altogether too evasive. Just where one

stops in estimating whether the involucre may be "tenuiter subglandulosa" (Zahn's characterization of typical *H. venosum*) and "densissime glandulosa" I do not know. Var. *Blombergii* was based on a single collection from Massachusetts. Of the 105 specimens from that state before me 6 show no appreciable glands on the involucre, 89 have them obvious but possible to count (from 1 to 6 or 8 on a phyllary) and could be described by Zahn's "tenuiter subglandulosa", and 10 specimens have enough glands to pass as "densissime glandulosa". I give up.

There seems to be, however, a very real geographic variation within *Hieracium venosum*. All material before me from New England (with the exception of a few sheets from Cape Cod, Martha's Vineyard and Nantucket) to southern Ontario, south into Pennsylvania and Kentucky, has the upper surfaces of the later and abundant basal leaves quite glabrous, although the smaller basal ones may have setose upper surfaces. Much of the material from Georgia to New Jersey and a few specimens from southeastern Massachusetts have the upper surfaces remotely setose with thick-based hairs. Thus, of the relatively small but significant representation before me 14 sheets (including all from south of lat. 38°) from Virginia have setose upper surfaces, only 2 (both from north of lat. 38° 30′) have them glabrous; 8 (all but 2 from the outer Piedmont or the Coastal Plain) from North Carolina have setose upper surfaces, 7 (all from the mountains) not; 3 from South Carolina setose, 0 glabrous; 5 from Georgia setose, 1 (from Pine Mt.) glabrous; and all from Missouri setose. The setose upper surface, as opposed to the esetose one, seems to mark a real geographic variation. In view of the fact that all our collections from the regions best known to Banister (and through him Plukenet) and to Clayton (and through him Gronovius) have the setose upper surfaces ("foliis . . . hirtis—*Gronovius;* "Folia *tenuitate membranacea, supra pilis raris adspersa*"—*Linnaeus*), I am treating the common plant of southeastern Virginia as typical of the species as recognized by Willdenow and by Torrey & Gray and later authors.

Michaux did not even recognize *Hieracium venosum*. He lumped the two very different plants, one with elongate subcylindric inflorescences, thick green foliage and stoutish stems, the other with open corymbiform panicle, often purple-marked

membranous foliage and slender stems as *H. Gronovii.* Under that inclusive name he had two varieties:

Var. α. *nudicaule:* caule subunifoliato: panicula subfastigiata.
— β. *foliosum:* caule parce folioso: panicula oblonga.
HAB. β. in Virginia et Carolina.
— α. in Canada et Pensylvania.

The photograph of Michaux's material which I took in 1903 shows the two plants: his *H. Gronovii,* α. *nudicaule,* the common northern extreme of *H. venosum* with leaves glabrous above. The label bears the annotation "État de N. York et Pensylvanie" and the significant note: "calyce pedunculisq. hispidis", which places it perilously near "var. *Blombergii*"!, so that the latter name must lapse with those who think the more glandular specimens worth sorting out. *H. Gronovii,* var. *foliosum* Michx. is very characteristic *H. Gronovii* as now generally interpreted, the plant with 2–10 well developed and scattered cauline leaves. The occasional more leafy individuals, with 20–30 cauline leaves seem not worth separating, at least, they are not var. *foliosum.*

The highly plastic series of plants known as *Hieracium marianum* Willd. seems to be a group of more or less perpetuating hybrids with *H. venosum* as one parent, *H. Gronovii* often, or northward *H. scabrum* Michx., as the other. The resultant maze is very complex. It is our nearest approach to the baffling series of apomicts and mixed progeny with which the European students of *Hieracium* are familiar.

THE WILD CHERRY OF THE CARRIZO SANDS OF TEXAS

V. L. Cory

My very good friend, Mr. H. B. Parks, from time to time has called to my attention the fact that the wild cherry of the sand hills along the Bexar-Wilson County line is different from the other described species of cherries, and to substantiate his statements at various times he has sent me material of this plant for study. Some of the fruiting material thus received was sent to a leading botanist for determination, and by him it was referred to *Prunus virens* Woot. & Standl., the evergreen cherry, which, in Texas, is found only in the mountains of the Trans-

Pecos Area. Moreover, observations and abundant material show that our plant is deciduous, and it is known to differ otherwise from *P. virens*. I take great pleasure in naming this new cherry in honor of its discoverer, my esteemed co-worker, Mr. H. B. Parks.

Prunus **Parksii,** n. sp. Plant a small tree, 3–5 meters high, with a definite trunk which is up to 7 cm. in diameter, and a few slender, drooping branches; bark of trunk gray to almost black with a hard, even pebbled surface; bark of upper trunk and branches smooth, reddish-brown, exfoliating; leaves early deciduous, thick, bright green and glabrous on both surfaces with exception of the midrib below which for one-half its length or more is densely clothed with a rufous tomentum, elliptic-ovate, up to 7 cm. long and 4 cm. broad, the shorter leaves frequently being ¾ as broad as long, usually narrowed to the base, finely crenulate-serrate, the teeth appressed and black-glandular-tipped, relatively short-petioled; petioles more or less tawny-pubescent, slender, bearing 2 petiolar glands at base of leaf-blade, 5–7 mm. long, frequently about one-tenth the length of the leaf-blade; rhachis of the inflorescence tawny-pubescent below and glabrous above; pedicels stout, 6–7 mm. long; petals broader than long, 2 mm. broad, white, yellowish at base; hypanthium and sepals persistent, glabrous, the hypanthium saucer-shaped, usually with 3 subulate processes, which are up to 2 mm. long, in between the 5 broadly triangular lobes, which are 1 mm. long or less; fruit red, not fleshy, glabrous, globose, 5 mm. in diameter, sessile in the hypanthium.

Prunus **Parksii,** sp. nov. Arbuscula, 3–5-metralis, trunco primario evoluto ad 7 cm. crasso ramos nonnullos inclinatos edente; trunci cortice griseo vel nigricante aequa ratione undique sat minute fissurato, ramorum levi, brunneo-rubro exfoliante; foliis citius deciduis, crassis, utrinque laete viridibus glabrisque costa subtus excepta ad medium vel parum supra tomento rufo denso induta, elliptico-ovatis, ad 7 cm. longis, 4 cm. latis, foliis brevioribus saepius parte quarta longioribus quam latis, pro more basi angustatis, minute crenulato-serratis, dentibus adpressis nigro-glandulosis, sat breviter petiolatis; petiolis plus minusve indumento rufido obtectis, gracilibus, basi laminae glandulis petiolaribus 2 onustis, 5–7 mm. longis, saepius decima parte laminae longitudine; inflorescentiae rachi deorsum fulvo-pubescente sursum glabro; pedicellis crassis, 6–7 mm. longis; petalis latioribus quam longis, 2 mm. latis, albis, basi lutescentibus; hypanthio cum sepalis persistente, glabro, latius cyathiformi, pro more processubus subulatis 3 armato, ad 2 mm. longis inter lobos 5 late triangulares ca. 1 mm. longos positis; fructu rubro, haud carnoso, globoso, 5 mm. crasso, in hypanthio sessili.

The new species is a deciduous cherry closely related to *P. serotina* and to *P. eximia*. It differs from *P. serotina* in being a low-growing tree, in having fruits that are red instead of black and which contain little or no pulp, and in being early-deciduous. In general the new species differs from *P. eximia* in being a much smaller tree with markedly fewer branches which are less abundantly leafy, and with the foliage early deciduous (*P. eximia* seen in Polecat Canyon, December 13, 1942, still retained its more abundant foliage). In particular other contrasts between the new species and *P. eximia* are that the twigs and petioles of the former species are somewhat pubescent and the lower part of the rhachis of the inflorescence is decidedly pubescent while in the latter species these parts are glabrous, and in the former species the leaves are thick, have a finely crenulate-serrate margin, with a relatively broad blade, and a relatively short petiole, while in the latter species the leaves are thin, have a coarsely crenulate-serrate leaf-margin, with a relatively narrow blade, and a longer petiole (as much as thrice as long). The new species is known only from the Carrizo Sands and neither *P. serotina* nor *P. eximia* grow on this formation. It is found growing in depressions of the Carrizo Sand Area of Texas. Mr. Parks knows of three locations of this species in localities separated by many miles, these being in Bexar, Wilson, and Guadalupe Counties. He comments that some plants at each locality indicate extreme old age, and that the largest plant he has seen had a trunk three inches in diameter at one foot above the ground. He further comments that the flowers appear after the leaves in the month of April, and that the fruits are ripe and that the leaves drop by the first of September.

No. 23626, collected by H. B. Parks, May 25, 1937, along the county line road between Bexar and Wilson Counties, in Wilson County, near Kicaster, is designated as the type specimen. It is deposited in the Gray Herbarium. Representative material is available to other herbaria upon request.

I wish to express grateful appreciation to Dr. Leon Croizat for valuable assistance given me in the preparation of the Latin description in this manuscript.

Substation No. 14, Sonora, Texas

A NEW AMSONIA FROM THE OZARKS OF ARKANSAS

Robert E. Woodson, Jr.

During the fall of 1942, my friend Leslie Hubricht brought to my attention a dried specimen of an Amsonia which he had collected in Garland County, Arkansas, and which he considered distinct from the narrow-leaved Amsonia of the "bald knobs" of the Missouri and Arkansas Ozarks currently treated as *A. ciliata* var. *filifolia* Wood. At the time, I was quite sceptical and insisted upon waiting until living plants, which Mr. Hubricht had thoughtfully obtained, had bloomed in the experimental plots of the Missouri Botanical Garden. These plants have now bloomed, and a comparison with the plants from the bald knobs, which we have had growing in the Garden for many years, completely vindicates their separation. Furthermore, upon re-examining the series labelled as *A. ciliata* var. *filifolia* in the herbarium of the Missouri Botanical Garden, I find that many so labelled from Arkansas are really the new species, also represented by a single collection in the adjacent Ouachita Mountains of Oklahoma. I have thought it fitting to associate Mr. Hubricht's name with this fine new species:

Amsonia **Hubrichtii** Woodson, spec. nov. Herbae perennes, caulibus pluribus vel numerosis ca. 4.5–6.0 cm. altis superne sub inflorescentiam ramosis inferne simplicibus omnino glabris. Folia irregulariter approximata plerumque sat congesta linearia brevissime petiolata acuminata ca. 5–9 cm. longa 0.4–0.5 cm. lata crassiuscule membranacea supra saturate viridia illustria nervo medio lato albo notata nervis secundariis conspicuis subtus pallidiora. Inflorescentia paniculata multiflora sessilis vel brevipedunculata ramulis caulis sterilibus haud superantia; floribus amabile caeruleis, pedicellis ca. 0.5 cm. longis, calycis laciniis triangularibus acuminatis ca. 0.15 cm. longis margine conspicue scariosis glabris, corollae extus omnino glabrae tubo hypercrateriformi ca. 0.7 cm. longo basi ca. 0.15 cm. ostio ca. 0.3 cm. diametro lobis oblongo-lanceolatis acutis ca. 0.6 cm. longis 0.2 cm. latis patulis. Folliculi anguste fusiformes 9–15 cm. longi ca. 0.3 cm. crassi glabri; seminibus cylindricis oblique truncatis ca. 0.9 cm. longis 0.15 cm. crassis.

Arkansas: clark: on Washita River, Arkadelphia, Aug. 25, 1883 (fruit) *G. W. Letterman s. n.;* rocky creek-bottoms, exact locality lacking, Oct. 26, 1932 (fruit), *D. Demaree 9988;* garland: shale outcrop subject to overflow, margins of Ouachita near Hot Springs, April 22, 1924, *E. J. Palmer 24479;* Hot Springs, Aug. 5,

1879 (fruit), *G. W. Letterman s. n.;* creek-bottoms, Hot Springs, April 30, 1939, *D. Demaree 19027;* rocks in creek-bottoms, Magnet Cove, April 8, 1939, *D. Demaree 18856;* LOGAN: along bed of rocky branch, near Blue Mountain, May 11, 1924, *E. J. Palmer 24811;* PIKE: Prairie Creek, gravel bars, Murfreesboro, Sept. 29, 1932 (fruit), *D. Demaree 9381;* YELL: along stream 3.2 mi. west of Birta, May 4, 1940, *L. Hubricht B1800* (TYPE, Herb. Missouri Bot. Gard.). OKLAHOMA: MCCURTAIN: rocky creek-beds, Broken Bow State Park, May 16, 1936, *D. Demaree 12654.*

All the specimens cited are deposited in the herbarium of the Missouri Botanical Gardens, but duplicates of most presumably are to be found in other American herbaria.

Amsonia Hubrichtii strikingly recalls *A. illustris* by its habitat in rocky or gravelly creek-bottoms of the Ozark region; but the latter, of course, has much broader leaves and externally pubescent corollas. Its closest relative apparently is the Ozark phase of *A. ciliata* var. *filifolia,* which, however, is much less in stature, with dull foliage, definitely pedunculate inflorescences held well above the leafy shoots beneath them, and somewhat larger, broader corollas.

In the perennial borders of the Missouri Botanical Garden, *A. Hubrichtii* has proved to be a much more satisfactory plant than the "*A. tabernaemontana*" (frequently actually *A. illustris*) offered by many nurserymen. It is a neater plant of more refined growth, the foliage is ornamental, and the clearer blue flowers are displayed to better advantage. The Ozark phase of *A. ciliata* var. *filifolia* is also a satisfactory and long-lived border perennial with something of the grace of *Linum perenne.*

MISSOURI BOTANICAL GARDEN,
WASHINGTON UNIVERSITY,
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POTAMOGETON SPIRILLUS MAY GROW AS AN ANNUAL

W. C. MUENSCHER

THE small pondweed, *Potamogeton Spirillus* Tuckerman, is usually described as possessing stems "arising form slender forking rootstocks". During several seasons while observing seedlings of species of Potamogeton in the field, it was noticed that

P. Spirillus growing in Oquaga Lake, Broome County, New York, had neither rootstocks nor winter buds at the base of the plants. Field studies in 1941 and 1942 disclosed that the plants started from seeds germinating in early May and matured fruits by August and September of the same year. During this entire period the plants retained the primary root even though some adventitious roots developed from the lower nodes of the more or less erect stem. The shell of the old "seed" remained attached at the junction of the base of the stem and primary root.

A search made in early spring and at intervals later failed to reveal a single plant that had started from overwintered structures and not a single plant was found with a rootstock; all had primary roots and seeds attached at the base. Apparently, in this locality, *P. Spirillus* performs as an annual. Oquaga Lake is a clear, cold, spring-fed lake. The *P. Spirillus* grows in 1 to 2 meters of water. Specimens taken July 2, no. 20631, and September 6, 1941, no. 20632, have been deposited in the herbarium of Cornell University.

Since this species is known to have rootstocks or at least more or less horizontal stems with roots at the nodes, an examination was made of all the specimens in the herbarium of Cornell University to determine whether any of them indicated the annual habit. The following sheets of *Potamogeton Spirillus* collected in New York State, all contain fruiting plants with the primary root and pericarp of the germinated "seed" (nutlet), still intact:

Upper Chateaugay Lake, Clinton Co., September 11, 1930, Muenscher and Bassett Maguire, no. 744; on sandy bottom, growing with *Potamogeton Vaseyi* in Millsite Lake, Jefferson Co., July 10, 1931, Muenscher and Maguire, nos. 1624 and 1625; Cheyney Pond, Essex Co., August 23, 1932, Muenscher and A. A. Lindsey, no. 2846; Sacandaga Lake, Hamilton Co., July 26, 1932, Muenscher and Lindsey, no. 2855; Cayuta Lake, Schuyler Co., July 5, 1931, Muenscher, no. 17548 and August 9, 1933, Muenscher and V. M. Lefler, no. 18252. In addition, a sheet of plants collected August 11, 1911 (Fernald and Wiegand 4492), in Rushy Pond, in Newfoundland also has specimens with the primary root and the old "seed" still attached.

Most students of Potamogetons, either by direct statement or implication, treat them all as perennials. *Potamogeton Spirillus* under some conditions at least grows as an annual.

Department of Botany,
Cornell University

Our Varieties of Trifolium pratense.—It is generally assumed that the common Red Clover of cultivated fields and roadsides, where it has spread from the cultivated crops, is true *Trifolium pratense* L. A much less common plant of waste ground, roadsides and clearings from Labrador across the continent to Alaska and locally south through much of the United States is true *T. pratense*, the cultivated plant being var. *sativum* (Mill.) Schreb. The two are distinguished as follows:

T. pratense L. (typical). Short-lived perennial, with glabrous or sparingly pilose stems 0.5–4 dm. high; larger leaflets 1–3 cm. long and 0.5–1.5 cm. broad; heads 1.3–3 cm. long.

Var. sativum (Mill.) Schreb. Coarser and longer-lived, with stems 3–8 dm. high; larger leaflets 3–7 cm. long and 1.5–3.5 cm. broad; heads 3–4 cm. long.

A form of typical *T. pratense* with densely villous or hirsute stem is forma *pilosum* (Gris.) Hayek. The albino of typical *T. pratense* is forma *leucochraceum* Asch. & Prantl. The albino of var. *sativum* is forma *flavicans* (Vis.) Hayek.—M. L. Fernald.

Trifolium hybridum and its Var. elegans.—Two rather clearly defined extremes of *Trifolium hybridum* L. are naturalized in North America. Typical *T. hybridum* (*T. fistulosum* Gilib.) is the cultivated plant, spreading to roadsides and clearings. It is more frequently represented in the wild by var. *elegans* (Savi) Boiss., the latter widely naturalized but not generally cultivated. Typical *T. hydridum* has the hollow and soft stems 3–8 dm. high; the larger leaflets 2.5–6 cm. long and 2–3.5 cm. broad; the heads very dense and 2–3.5 cm. in diameter, the individual flowers being 8–11 mm. long. Var. *elegans* has the slender stems firmer, 1.5–6 dm. high; larger leaflets 1.5–3.5 cm. long and 1–2.5 cm. broad; the less compact heads 1.5–2.5 cm. in diameter, with the individual flowers only 6–8 mm. long.—M. L. Fernald.

Centaurea nervosa in America.—In studying the complex group including *Centaurea Jacea* L., *C. nigra* L. and *C. nigrescens* Willd. one sheet of material in the Gray Herbarium is quickly withdrawn from this intricate series. This is a specimen, in

foliage resembling *C. nigrescens*, but with the middle and outer phyllaries pale and tipped by a filiform and arched-recurving appendage bordered by similarly filiform and distant fringing cilia. The plant, which closely matches the European *C. nervosa* Willd., was collected at the margin of a grainfield east of the lower falls of North Beaver Creek, Vaughan's, Washington County, New York, July 30, 1916, by *Stewart H. Burnham*. It was distributed as *C. Jacea*, var. *nigra*. This seems to be the first evidence of *C. nervosa* in America. It is important to know whether in 28 years it has become established.—M. L. Fernald.

Volume 45, no. 535, including pages 265–304 and plates 762–769, was issued 6 July, 1943.

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